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A.D. 1854 . . . . . N<sup>o</sup> 709.

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S P E C I F I C A T I O N

OF

JAMES ALEXANDER MANNING.

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TREATMENT OF SEWERAGE FOR THE  
PRODUCTION OF MANURE, &c.

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L O N D O N :

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A.D. 1854 . . . . . N° 709.

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**Treatment of Sewerage for the Production of  
Manure, &c.**

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**LETTERS PATENT** to James Alexander Manning, of the Inner Temple,  
London, Esquire, for the Invention of “**IMPROVEMENTS IN THE TREATMENT  
OF SEWERAGE.**”

Sealed the 26th May 1854, and dated the 27th March 1854.

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**PROVISIONAL SPECIFICATION** left by the said James Alexander Manning  
at the Office of the Commissioners of Patents, with his Petition, on the  
27th March 1854.

I, JAMES ALEXANDER MANNING, of the Inner Temple, London, Esquire, do  
5 hereby declare the nature of the said Invention for “**IMPROVEMENTS IN THE  
TREATMENT OF SEWERAGE**” to be as follows:—

This Invention consists in the treatment of sewerage, so as to obtain certain  
valuable products contained therein suitable for manures, &c. The improve-  
ments consist in the employment of the waste products arising from the  
10 concentration of the crude solutions of sulphate of alumina in the manufacture  
of alum from alum shales, &c., by which treatment certain constituents of  
sewerage available for manure are rapidly precipitated.

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**SPECIFICATION** in pursuance of the conditions of the Letters Patent, filed  
by the said James Alexander Manning, in the Great Seal Patent Office  
15 on the 25th September 1854.

**TO ALL TO WHOM THESE PRESENTS SHALL COME**, I, JAMES  
ALEXANDER MANNING, of the Inner Temple, London, Esquire, send greeting.

**WHEREAS** Her most Excellent Majesty Queen Victoria, by Her Letters  
Patent, bearing date the Twenty-seventh day of March, in the year of our



*Manning's Improvements in the Treatment of Sewerage.*

Lord One thousand eight hundred and fifty-four, in the seventeenth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said James Alexander Manning, Her special license that I, the said James Alexander Manning, my executors, administrators, and assigns, or such others as I, the said James Alexander Manning, my executors, administrators, 5 or assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "**IMPROVEMENTS IN THE TREATMENT OF SEWERAGE**," upon the 10 condition (amongst others) that I, the said James Alexander Manning, by an instrument in writing under my hand and seal, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the 15 said Letters Patent.

**NOW KNOW YE**, that I, the said James Alexander Manning, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement, that is to say :— • 20

My said Invention relates to the treatment of the sewerage and drainage waters of cities and other localities, in such manner as to precipitate certain valuable constituents or solid matters therein contained, the deposit so produced being available as a manure or fertilising agent. The precipitating agent which I employ in this system of treating sewerage and drainage waters is the de- 25 posited matter obtained from the first boiling down of the alum liquor, or rough solution of sulphate of alumina, in the manufacture of alum from alum shales and other crude matters. This deposited matter is technically and commercially known as "soft sludge," and it consists essentially of basic and other sulphates of alumina and iron. The defecation of sewerage and drainage waters or other 30 polluted liquids may be effected under various routines of treatment, but it is preferred to employ a mixing tank or reservoir, such, for example, as that described in the Specification of British Letters Patent already granted to me, and bearing date the Twenty-ninth day of November, One thousand eight hundred and fifty-three. The sewerage matter or other polluted liquid to be 35 defecated is to be received into this tank or holder, and to every one hundred thousand gallons of sewerage therein received there are added in such tank fifty gallons of "soft sludge," or the aluminous matter herein-before referred to. This proportion is given as one generally applicable in the working out of my



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*Manning's Improvements in the Treatment of Sewerage.*

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process. The tank only requires to be charged with this quantity of "soft sludge" every fourth time, as the fifty gallons are sufficient for four charges of one hundred thousand gallons each. On adding the "soft sludge" the contents of the reservoir are to be agitated, and whilst the agitation is going on, a  
5 mixture consisting of one bushel of powdered caustic or unslacked lime and ten pounds of refuse animal charcoal, more or less, is to be thrown into the tank, and this is to be done every time the tank is filled, as it accelerates the clarification of the water, the general manipulation being conducted either as described in my earlier Specification, to which I have herein-before referred, or  
10 otherwise. The constituents thus separated by the action of the "sludge" are allowed to deposit, when the supernatant liquid may be run off, leaving the deposit free for use, as may be required. The solid deposit obtained in this manner may either be employed direct as a fertilizing agent, or it may be mixed with other matters suitable for manures, such as lime slaked with the refuse  
15 brine from the fish curers, refuse animal charcoal, or the refuse from the prussiate of potash manufacture.

Having now described and particularly ascertained the nature of my Invention, and the manner in which the same is or may be used or carried into effect, I may observe, in conclusion, that I do not confine or restrict myself to  
20 the precise details or arrangements which I have had occasion to describe or refer to, as many variations may be made therefrom without deviating from the principles or main features of my Invention; but what I consider to be novel and original, and therefore claim as the Invention secured to me by the herein-before in part recited Letters Patent, is,—

25 The employment of the "soft sludge" from the alum works, that is to say, of the deposit which is formed during the first boiling down of the rough liquors obtained from alum shales in the manufacture of alum, and which deposit consists essentially of basic and other sulphates of iron and alumina, as a means of separating from sewerage and other polluted liquids certain valuable  
30 fertilizing constituents contained therein.

In witness whereof, I, the said James Alexander Manning, have hereunto set my hand and seal, this Twenty-first day of September, One thousand eight hundred and fifty-four.

JAMES ALEXANDER MANNING. (L.S.)

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